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ABSTRACT

A fundamental worldwide trend of the past few decades has been the remarkable expansion of national systems of formal education. Two competing theories have been adduced to explain how this expansion affects patterns of equality of educational opportunity. The thesis of industrialization holds that educational expansion tends to increase equality of opportunity. Elite mass theories claim that we can expect no necessary trend, and that expansion may easily increase as well as diminish privilege. These competing theories are tested by examining cohort trend data that elucidate the relationship between educational attainment and sex, region, and family background in Brazil. Evidence exists to suggest that educational inequalities based on sex are breaking down. There is little evidence, however, that regional or family background disparities are declining in Brazil. The data provide firmer support for the elite mass model than they do for the thesis of industrialization. (Author/APM)

TRENDS IN INEQUALITY OF EDUCATIONAL OPPORTUNITY IN BRAZIL: A TEST OF TWO COMPETING THEORIES

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TRENDS IN INEQUALITY OF EDUCATIONAL OPPORTUNITY IN BRAZIL: A TEST OF TWO COMPETING THEORIES

A pervasive worldwide trend of the past few decades has been the remarkable expansion of national systems of formal education. This trend has occurred not only in countries generally thought of as industrialized or developed, but has been a characteristic of developing or third-world nations as well. Indeed, some analysts have spoken of a "world educational revolution" (Meyer, et al., 1975: see also Nielson and Hannan, 1977). Without question, both rates of school enrollment and mean levels of individual educational attainment are increasing and give every indication of continuing to increase throughout the world. More people are now going to school and for longer periods of time than ever before (Coombs, 1968).

The documentation of this expansion, though, leads to the question of the consequences of the expansion for prevailing patterns of inequality. Are some groups benefitting more from this expansion than other groups? Does educational growth imply more equality of educational opportunity? What does educational expansion, along with the generally concomitant processes of urbanization and industrialization, do to existent relationships between socioeconomic background and educational attainment?

A substantial literature has developed around these questions, most of it pertaining to already industrialized countries. Boudon (1974), reviewing this literature, suggests that in general inequality

of educational opportunity decreases over time in most Western industrial societies. Parkin (1971) reaches a similar, if guarded, conclusion for Eastern industrial societies, although Dobson (1977) demonstrates persisting inequalities of access to education in the Soviet Union. Working with a representative national sample of U.S. men, Hauser and Featherman (1975) have shown that while the effects of ethnic and regional variables have been declining substantially over time, the effects of family background have not diminished. This was during a period of rapid expansion in U.S. higher education. In an earlier piece, Spady (1967) demonstrated that even though the chances of children in lower social strata to attain given levels of primary or secondary schooling have gotten better over time, their position has not improved at all regarding access to higher education, and may have even gotten worse. Sørenson (1971) essentially replicates this result for Denmark, observing that during a period of rapid educational growth in Denmark, the relationship between family background and educational opportunity remained virtually constant. Halsey (1977) reports that the effect of family status on education has increased since the 1940's in Britain, again in the face of dramatic educational expansion.

While empirical results on these issues have accumulated and continued to accumulate for industrialized societies, we still know surprisingly little about the effects of educational growth on equality of educational opportunity in developing countries. We

have many reasons to expect that the experiences of newly developing nations will differ from those of already industrialized ones, making generalizations from current empirical studies suspect. First, many developing nations were at one time colonies, and their schools are in many cases "transferred institutions" of the colonizing nations (Foster, 1971:15). To the extent that these new school systems were able to produce new criteria of social rank, traditional patterns of stratification were likely to have been disrupted. This suggests that educational expansion in developing countries might affect patterns of inequality differently than in industrialized societies.

Also, currently developing societies seem more likely to try to adapt the educational system to manpower needs and economic exigencies than was the case earlier. The result of this might well be that the democratizing or pedagogical functions of schools may be sacrificed to issues of economic expediency. Foster has argued that schooling in developing societies might well serve to accentuate the differences between elites and masses, and has suggested:

> Where economic objectives are paramount, a good deal of inequality in access to education must result and benefits are likely to be maximized if resources are concentrated on regions and groups more likely to profit from them. In other words, educational investment in primary education will tend to be concentrated in geographical areas that are already the most modernized, while the development of "efficient" means for the selection of individuals for

> further training tends to benefit already favoured minorities within a population. Alternatively, strategies designed to allocate educational resources and opportunities more evenly among a population may spread these resources so thinly that they may make little tangible contribution to economic development (Foster, 1971:31).

Foster's elite-mass thesis holds that we have no particular reason to expect educational expansion to promote educational equality in developing nations (see also Foster, 1969). Traditionally disadvantaged groups, even if they attain more schooling than before, need not be closing the gap between themselves and more advantaged groups by doing so. Put simply, "a sheer increase in the size of enrollments is not necessarily associated in any linear fashion with greater relative equality of educational opportunities for socio-economic or ethnic groups" (Foster, 1971:25). Elliot (1975), while disputing much of Foster's analysis, basically concurs with this assessment, with some qualifications:

> It seems, then, that we should be reluctant to accept any general law about growing or diminishing inequalities in education over time. If high priority is given to industrialization, urbanization, and modernization, with all that they imply in terms of the distribution of political power between social groups, it is quite conceivable that inequalities will increase. If, on the contrary, high priority is demanded by the rural population, they may be much attenuated very quickly (Elliot, 1975:253).

Not everyone, though, is likely to agree with this line of thought. Particularly to the point is the "thesis of industrialization." This position, summarized most cogently by Treiman (1970), holds that the emergence of free mass educational systems, along with the continuing process of urbanization, should act to free individuals from their socioeconomic origins (see also Davis, 1962). As societies develop economically and as educational systems grow, the thesis continues, success in the educational system comes to depend more on the abilities or motivations that the student brings to the school and less on his or her ascribed characteristics. Clearly this line of thinking is a version of the Parsonian claim

that modern societies can be expected increasingly to demonstrate universalistic rather than particularistic criteria for success (Parsons, 1951).

The thesis of industrialization and Foster's "elite-mass" model lead to very different empirical propositions about the effects of educational expansion on individual success within the educational system. The thesis of industrialization suggests a general process of convergence--the educational experiences of those with traditionally penalized ascriptive traits can be expected to converge with the experiences of those with traditionally advantageous traits. Statistically, this means that the relationship between attainment and such variables as sex, socioeconomic background, and region of residence should be declining over time. The opposing thesis posits that we cannot make generalized predictions about these trends, and that we have no more reason to expect equality of educational opportunity to increase than to decrease under modern conditions of development. Even given enormous educational expansion, according to this thesis, we simply cannot assume that these relationships will decline over time.

We propose to test these countering claims by assessing trends in educational attainment in Brazil. We will look at cohort trends in the relationship between educational attainment and three variables--sex, region, and family background.[1] The logic of our analysis is straightforward. The thesis of industrialization (or convergence) predicts that the importance of these variables should be declining over time, and the elite-mass thesis holds that we can expect no necessary trend.

Brazil is a particularly apt nation with which to test these opposing theses. In the first place, Brazil is marked by pronounced regional inequalities. Some areas of the nation are as industrialized as any first-world nation, while others can best be described as pre-industrial. We are thus in a position to conduct a comparative analysis within Brazil to determine how level of economic development or industrialization affects the processes we have been describing.[2]

Secondly, the Brazilian educational system has been expanding enormously in recent years. This expansion has been of a very uneven nature. Smith (1972), among others, has observed that the most rapid expansion in the Brazilian educational system, in terms of enrollment, number of institutions, and number of teachers, has generally occurred at higher levels. Lower levels too are growing, but not nearly at a rate commensurate with that of advanced education.[3]

DATA

The data for the present analysis come from the definitive 1973 Pesquisa Nacional por Amostra de Domicilios (PNAD) survey of Brazil. This survey, conducted by Instituto Brasileiro de Estatistica (IBGE), the Brazilian census bureau, consists of a representative national sample of all members of the Brazilian population ten years of age and over. The basic sampling unit was the household, and respondents were asked a wide range of questions pertaining to their demographic and socioeconomic characteristics. The quality of the data seem to be on a par with comparable data collected anywhere. The PNAD survey covers the resident population of Brazil, excluding members of the armed forces residing on military bases and excluding internees,

patients, and other residents of institutions such as sanitoriums, homes for the aged and for orphans, monasteries and convents, and penitentiaries. Nonetheless, resident employees of these institutions and their families are included in the survey. In the present analysis we examine the educational experiences of approximately a quarter million Brazilians aged 10-97.

We would have liked to look at the educational experiences of children under the age of ten in Brazil, but PNAD did not collect data on this age group. Certainly we would expect less heterogeneity in the educational experiences of this age group than of older cohorts, but neither would we expect uniformity of experience. Our results, therefore, may not be generalized to those under ten years of age.

Regionalizing Brazil

No sustained analysis of Brazil can afford to overlook regional variations. The contrasts between the partly uncharted Amazon area and the beaches of Rio de Janeiro, while extreme, also accurately typify the nation's heterogeneity.

Numerous analysts have developed regionalization schemes for Brazil (Henshall and Momsen, 1976). For present purposes, we have followed Faissol (1978) in dividing Brazil into four major socio-economic regions: the National Core, the Dynamic Periphery, the Depressed Periphery, and the Frontier. The first three of these are unambiguously ranked according to industrial or economic development, while the position of the Frontier is less clear.

NATIONAL CORE

In the National Core of Brazil we include the states of Guanabara, Rio de Janeiro, and Sao Paulo. While certainly not free of poverty, the bulk of Brazil's population and wealth is concentrated in this area. The area also assumes national leadership in industry, technology, and communications. By any definition, this area constitutes the heartland of Brazil.

DYNAMIC PERIPHERY

This region includes Brasilia plus the states of Parana, Santa Caterina, Rio Grande do Sul, Minas Gerais, and Espirito Santo. Brasilia, while geographically separated from the heartland of Brazil, is the nation's capital and a highly cosmopolitanized city. In 1970, the states of Parana, Santa Caterina, and Rio Grande do Sul provided 16.8 percent of Brazil's industrial employment and 12 percent of the value added by manufacturing (Dickenson, 1978:176). Rio Grande do Sul and Minas Gerais are generally considered Brazil's two most important industrial states after Sao Paulo and Guanabara. Parana is the least developed state in this region, but Dickenson has pointed out that "Since 1960 considerable attempts have been made by the state government to expand and diversify manufacturing, by improving infrastructure, financial incentives, and the development of industrial estates" (Dickenson, 1978:183).

DEPRESSED PERIPHERY

Faissol's Depressed Periphery includes Maranhao, Piaui, Ceara, Rio Grande do Norte, Paraiba, Pernambuco, Alagoas, Sergipe, and Bahia.

This region constitutes Brazil's legendarily poverty-stricken Northeast, and can best be thought of as pre-industrial. For the most part the region "retains a very high dependence on consumer industries linked to the processing of the agricultural and forest resources of the region" (Dickenson, 1978:187). Despite some governmental intervention to increase the industrial development of the region, it remains Brazil's most economically depressed area.

FRONTIER

The Frontier is composed of the states of Acre, Amazonas, Para, Amapa, Mato Grosso, and Goias, and the federal territories of Rondonia and Roraima. While the first of our three regions fit neatly into a hierarchy of economic development, this region does not. The region is characterized by a very low population density and very little industrialization. On the other hand, its extreme labor shortage makes wages in the Frontier atypically high. We defer extensive analysis of the Frontier for future publication, but do note that the region displays many of the characteristics generally associated with frontiers (Katzman, 1977).

We should point out that in the Frontier's two largest states, Amazonas and Para, PNAD only sampled respondents in the large and important port cities of Manaus and Belem. Since the population density of most of the area of these two states is less than one person per square kilometer, this should present no problem.

Analysis

Current Enrollments

Some 95 percent of all Brazilians who are enrolled in formal

schooling as their major activity are between ten and nineteen years of age. Only a small minority of the population are still in school by their twenties, and beyond that hardly anyone in the nation is a full-time student.[4] Not all Brazilian adolescents are equally likely to be in school, though. In Figure 1, we chart enrollment levels for both boys and girls in each of our four regions. (Table A1 in the appendix presents the full data from which this figure was constructed.)

[Figure 1 Here]

Clearly, school enrollment rates drop sharply from age 10-14 to ages 15-19 in Brazil. This is true for both males and females. The graph implies that in all regions over 50 percent of both males and females enrolled in school at ages 10-14 have left the system before age 20.

Interestingly, females do not seem badly under-represented in school enrollments compared to males, and in many cases even seem to hold slight advantages. In all regions of Brazil, 15-19 year old females are more likely to be in school than are males of the same age.

Regional differences in school enrollment are very evident in the graph, but the major contrast is between the poverty-stricken Northeast (what we are here calling the Depressed Periphery) and everywhere else. This is particularly true at younger ages, as children aged 10-14 in Brazil's Northeast are more likely to be working or engaged in domestic affairs as a full-time concern than they are to be in school.

The story for Brazilian school enrollments in 1973, then, is really quite simple. Males and females are about equally likely to be enrolled at ages 10-14, females are a bit more likely to be in school at ages 15-19, and there are substantial disadvantages associated with being born in one part of the country rather than another. But what about those who have completed their schooling? To what extent were their attainments tied to their socioeconomic characteristics? Figures 2 and 3 present information on these questions. Figure 2 charts cohort trends in educational attainment by region for men, and Figure 3 presents the corresponding information for women. (Tables A2-A5 present fuller information.)

[Figures 2 & 3 Here]

Adult Educational Attainment

Once again the story is quite straightforward. Mean levels of educational attainment are rising steadily in Brazil, for both men and women. The Depressed Periphery has always been and continues to be substantially behind the rest of the country in the provision of education, with somewhat less difference between the National Core and the Developed Periphery. In all cases, the upward trends have been steady and quite substantial.[5]

Increasing mean levels of schooling in Brazil are being accompanied by increasing size of the standard deviations (Tables A2-A5). Given that the educational system in Brazil has been expanding unevenly, this is not surprising.

It is a bit puzzling, though, that the standard deviation of educational attainment for men in the National Core has remained virtually the same throughout the century. What seems to be happening here is that floor effects are having a substantial impact on our pattern of standard deviations. For many of the less advantaged subpopulations depicted in Tables A2-A5, the real change over time has been the move of large numbers of people from no schooling whatsoever to the completion of some primary schooling. This process probably injected a great deal of variation into the schooling distribution. On the other hand, universal primary education has been more nearly the norm for a longer period of time for National Core men, and their increasing levels of attainment have probably been spread relatively evenly.

As a consequence of these changes in the means and standard deviations, the inequality of the distribution of schooling (i.e., the coefficient of variation, computed as the standard deviation divided by the mean) has been declining steadily over time. The interesting comparison here is between the Depressed Periphery and everywhere else. Inequality in the distribution of schooling for those born recently in the Depressed Periphery is about the same as for those born elsewhere in the early part of the century (c.v. $\approx$ 1.35). While not a direct test, this gives us some hint that regional inequalities are not being rapidly overcome in Brazil.[6]

Sex Convergence

We have shown that both men and women in Brazil have been substantially increasing their levels of educational attainment over

time, but have not yet directly examined the degree to which the educational experiences of men and women are becoming more alike. The industrialization thesis would imply that inequality of access based on an ascriptive characteristic such as sex should be breaking down over time. Elite-mass theory, on the other hand, would point to Brazil's longstanding tradition of patriarchy, indicating that sexual inequalities might be relatively resistent to change. To test these claims, we expressed sexual inequality as the ratio of the educational attainment of women to that of men. The results are shown in Figure 4, with the more complete data presented in Table A6.

[Figure 4 Here]

In general, the educational experiences of men and women in Brazil have been steadily converging thoughout the century. The process seems to be accelerating in recent years, and is true for all regions of Brazil. Women born in the early part of the century could generally expect to receive about three-fourths as much schooling as men. At least for the most recent cohorts, though, the educational levels of men and women are practically the same.[7]

Regional Convergence

Regional disparities in Brazil are well documented, and we need not dwell on them here (see Faissol, 1978; Henshall and Momsen, 1976; Baer, 1965; Leff, 1972). For present purposes we are interested in knowing if these regional differences are diminishing. Elliot's argument (see above) would suggest that they probably are not, since Brazilian policy-makers have tried to tune the educational system

into the needs of an expanding economy. On the other hand, both of the processes described by Treiman, i.e., urbanization and the emergence of free mass educational systems, have characterized recent Brazilian history, implying that regional differences should be diminishing. Figures 5 and 6 indicate the degree of regional convergence that has taken place in Brazilian educational attainment (Table A7 presents fuller data). In these figures, regional differences are expressed as the ratio of educational attainment in a lesser-developed region to the level of educational attainment in the National Core. Figure 5 pertains to men, Figure 6 to women.

[Figures 5 & 6 Here]

Looking first at Figure 5, if regional convergence is taking place, it is doing so haphazardly and at a dreadfully slow pace. The relative position of 20-24 year old men in the Dynamic Periphery is no better now than it was for men born in the 1920's. Men from Brazil's Depressed Periphery seem to be slowly improving their relative position, but still do not attain even half the schooling of those in the industrialized Core. Men from the Frontier have been substantially improving their relative positions over the past few cohorts, but again we are hesitant to conclude much from this highly uncharacteristic region.

The results for women look basically the same (Figure 6). If regional disparities are decreasing, they are doing so at an excrutiatingly slow rate.

Essentially, then, we must conclude that regional differences in Brazilian educational attainment are not only extremely marked,

but give every indication of persisting for a very long time. Since the nation's most highly educated region, the National Core, has not even begun to approach a ceiling on educational expansion (only 4 percent having been to university and fully 11 percent never having attended school at all), there are certainly no structural aspects of the Brazilian educational system that preclude regional disparities becoming more not less severe. Nothing inherent in Brazilian educational expansion rules out the possibility of the lines drawn in Figures 5 and 6 starting to slope downward.

Family Background Convergence

Perhaps the most crucial comparison between the industrialization thesis and the elite-mass thesis involves trends in the effects of family background over time. The thesis of industrialization holds that family background should become increasingly less important as a barrier to educational access as educational systems expand. The elite-mass theories, on the other hand, hold that this is contingent on the nature of the expansion. The Brazilian educational system has historically been very elitist (Texeira, 1970; de Azevedo, 1971), and the question is whether this expansion has served to reinforce or erode elite privilege.

To test these competing propositions, we charted trends in the effects of two indicators of family background, father's occupational status[8] and farm origin.[9] This was done simply by regressing years of schooling on these two variables, done separately for both men and women within each five year birth cohort. The results are shown

in Table 1. Since the results for each of the four regions tell basically the same story, we present data here only for the full sample, and present more detailled results in Table A8. For ease in interpretation, we multiply the effects of father's occupational status by ten. This has no effect on the substantive meaning of our results, but simply makes them easier to read.

[Table 1 Here]

The table presents absolutely no evidence that the effects of the occupational status of one's father on educational attainment have declined over time. For both men and women in Brazil, ten points of father's occupational status (on a scale from 0-100; see Footnote 1) is worth and has always been worth about one and a quarter years of schooling.[10] While the absolute size of this effect varies among the four regions, in all cases the pattern is the same: the effects of father's occupational status give no indication of abating over time. Access to educational opportunity in Brazil is as dependent on this measure of family background as much now as at any point in the space of Brazilian history for which we have data.

Similarly, the detrimental effects of farm origin on educational attainment have shown no signs of diminishing in Brazil, and there may even be a slight upward trend. Put simply, the difference between the sons and the daughters of farmers and the sons and daughters of families of other backgrounds has not grown less over time, and may have even increased. — In a nation in which such a large component of the population is engaged in agriculture, this suggests a remarkable persistence in patterns of privilege and disadvantage, even in the face of extraordinary educational growth.

Conclusion

What, then, are we to conclude about the relationship between educational expansion and educational equality in Brazil? On balance, we find little evidence that educational growth decreases the gaps between the privileged and the less privileged in this particular developing country. We do not feel that it is justifiable to posit any simple relationship between educational growth and equality of opportunity, and suggest that the form this relationship takes is contingent upon the nature of the expansion in the educational system.

Educational expansion Brazilian-style seems to have led to some convergence in the educational experiences of men and women, although we do not yet know the precise social consequences of this. Regional disparities, always severe in Brazil, remain as much so now as for people born early in the century. We find no evidence that the effect of family background is declining over time, and a careful reading of our Table A8 suggests that at least for farm origin, the importance of family background might even be increasing. This, we feel, provides substantial support for Foster's elite-mass hypothesis.

The thesis of industrialization, then, finds little support in our data. Our results suggest instead that educational planning in developing societies, if it is in fact intended to promote equality of access and opportunity, is unlikely to be successful in doing so so long as the expressed function of schooling is to accomodate the requirements of a growing economy. Educational equality will not be secured so long as those in positions of power continue to allocate

funds where they will have the most immediate economic pay-off. If equality of opportunity is to be more nearly achieved, resources must be distributed instead to those areas most sorely in need of them.

FOOTNOTES

[1] There are other categories we would have liked to examine, but do not have the data to do so. Among these are racial (Degler, 1971) and rural-urban (Pearse, 1973) differences. We are currently working to develop a scheme to analyze rural-urban distinctions in Brazil.

[2] Linz and de Miguel (1966) argue that national regions are often more useful units of analysis for comparative purposes than are nations.

[3] This is a familiar pattern among developing countries (Emmerij, 1974). For descriptive material on the Brazilian educational system, see Haussman and Haar (1978), Harrell (1970), Teixeira (1970), Havighurst and Moreira (1965), Havighurst and Gouviea (1969), Smith (1972), Weil, et al. (1975), and de Azevedo (1971).

[4] We should point out again that our data only pertain to those over ten years of age, only to formal schooling, and only describe the situation as of 1973. Non-formal education is increasingly important in Brazil, and cannot necessarily be expected to operate the same as formal education (LaBelle and Verhine, 1975).

[5] It seems a bit anomolous that both the enrollment patterns of children in the Frontier and the educational attainment of adults in the Frontier looks so much like the results obtained for the National Core. Given both the lack of an industrial base in this base in this region and the difficulties in establishing adequate educational facilities to such a widely dispersed population, we

might have anticipated a very different finding. Because of long-standing governmental efforts to promote immigration to the Frontier, we considered the possibility that the increasing levels of educational attainment among residents of the Frontier might be less a consequence of the expansion of schooling in the Frontier than the result of more highly-educated people migrating into the Frontier. While either phenomenon would serve to increase the mean educational level of the Frontier, they are substantially different processes. To test this, we compared the mean levels of educational attainment of those born in the Frontier with that of those born elsewhere. Obviously, this is not a definitive test, since we still do not know where the respondent received his or her schooling.

Contrary to what we expected, natives of the Frontier are a bit more well-educated than are migrants (results not shown). The differences are not large, generally amounting to about half a year of schooling, but are consistent. While these results are intriguing and worth pursuing, we leave them now as a puzzle for future research. For a survey of the literature on education and internal migration, see Kosinski, 1975.

[6] See Allison (1978) for a discussion of the coefficient of variation as a measure of educational inequality.

[7] It is likely that our respondents aged 20-24, i.e., those born between 1949-1953, have not all completed their formal schooling. To the extent that women are less likely to complete university than are men, we are somewhat overestimating the degree of convergence.

On the other hand, only a small fraction of the schooling taking place in Brazil is at the university level, and it may be that this cohort has substantially completed their formal schooling, in which case we are accurately depicting the trend. In either case, the results of the 1944-1948 cohort might give us a better indication of the real sex difference. Also, the equalization of educational opportunity between men and women says nothing about the degree to which women are able to "cash in" on their new levels of educational investment. In future analyses we will examine male-female differences in economic and occupational returns to schooling.

[8] Father's occupational status was measured as follows: PNAD asked respondents who were working what kind of an occupation they held and how much income they made, in addition to asking about their level of educational attainment. We classified the responses to the occupation question into the 82 second-level categories of the International Labor Office's International Standard Classification of Occupations (ISCO) scale. We further disaggregated a number of these categories to obtain even more homogeneous categories, eventually resulting in 92 categories. We then performed a canonical correlation analysis to derive occupational status scores (see Bills and Godfrey [unpublished] for more details on our procedures, and see Klatzky and Hodge, 1971, and Duncan-Jones, 1972, for a fuller description of canonical correlation). The canonical correlation procedure serves to maximize the ordinary product-moment correlation between the series of 92 occupational dummies with a composite of the respondent's level of income and education.

The resulting scores were then standardized into a 0-100 metric. This standardization has no effect on the scale's relationship with other variables, but merely facilitates their interpretation. Unpublished analyses have convinced us that these scores yield results consistent with those produced by other plausible scaling procedures, and that they faithfully represent the kinds of things that sociologists generally think of when they deal with occupational status.

[9] Unfortunately, PNAD did not ask respondents about their father's level of educational attainment. Nor do we have data on sibship structure or ethnicity, both important aspects of family background.

[10] Similar results are obtained, here and below, if we consider standardized coefficients (betas) rather than metric coefficients.

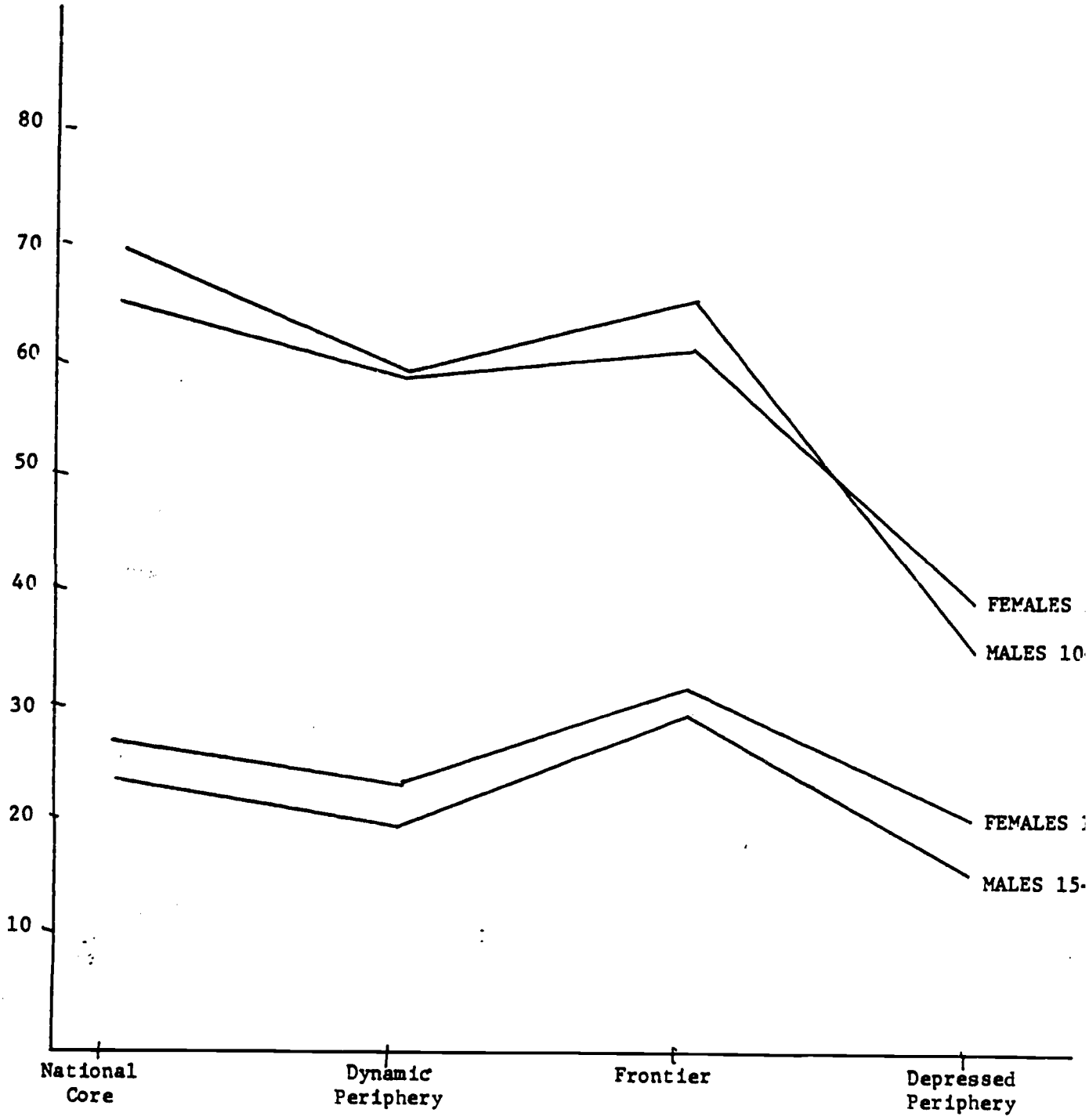

FIGURE 1: Percent Enrolled in School, by Region

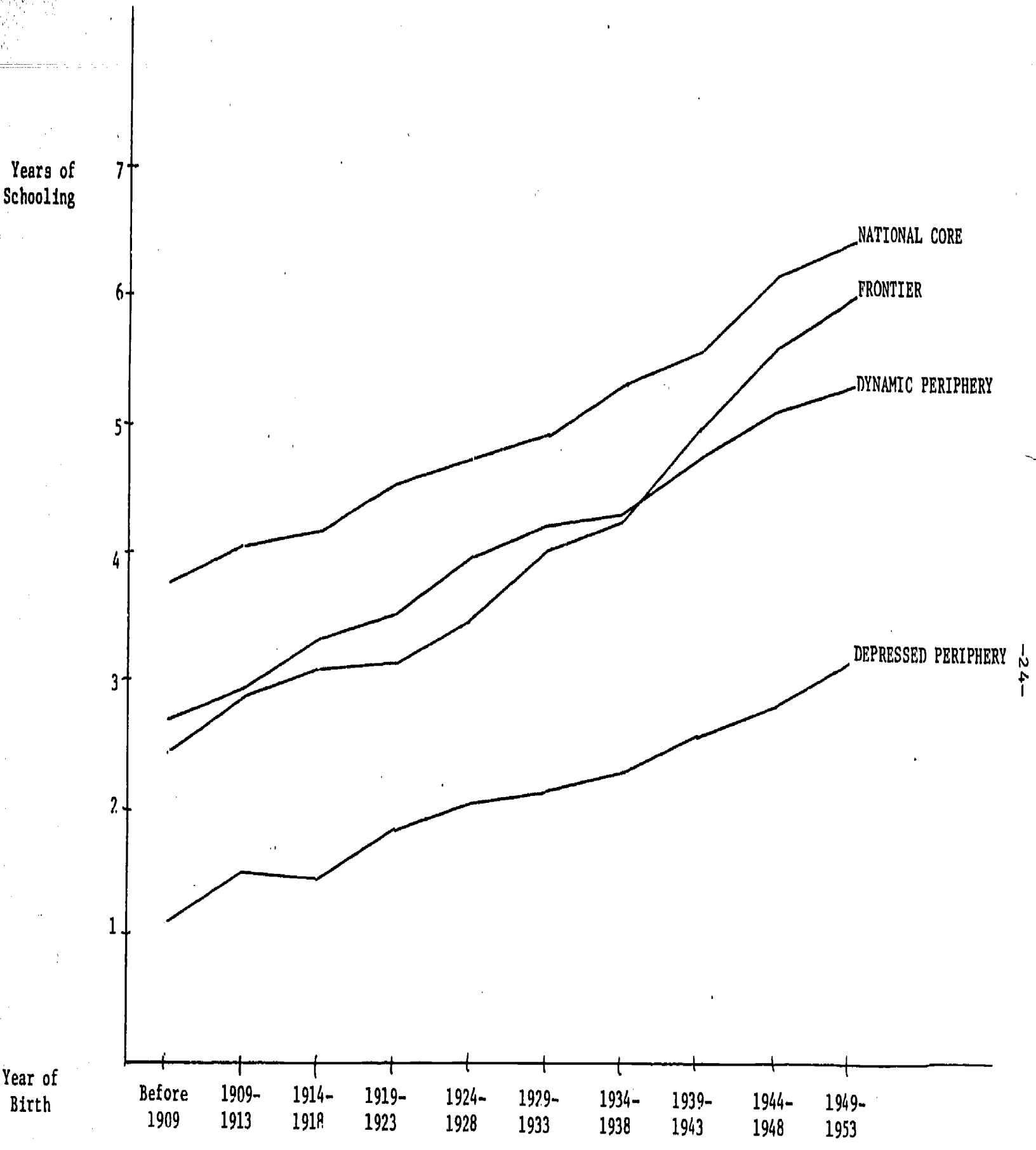

FIGURE 2: Trends in Mean Levels of Educational Attainment for Men

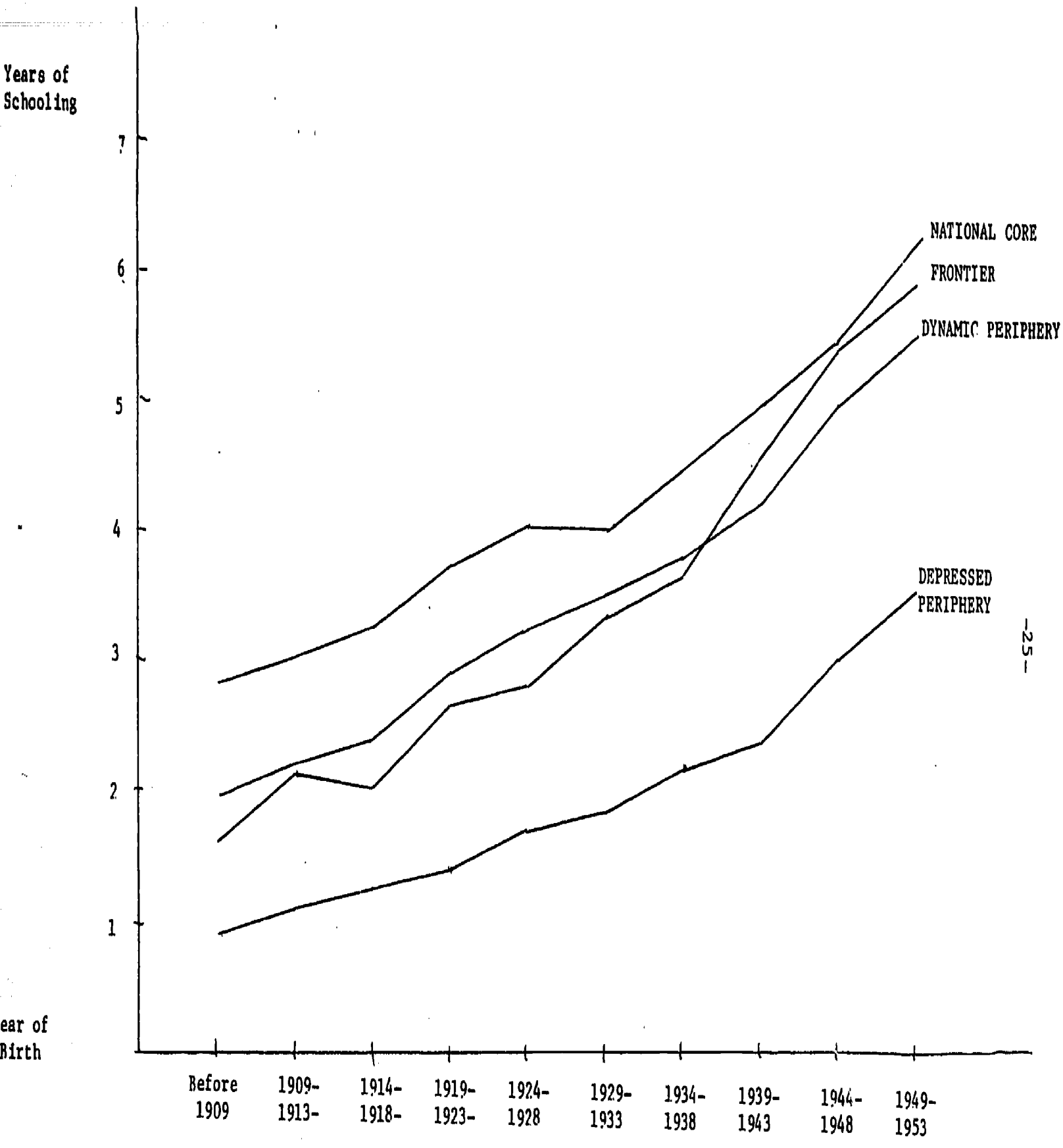

FIGURE 3: Trends in Mean Levels of Educational Attainment for Women

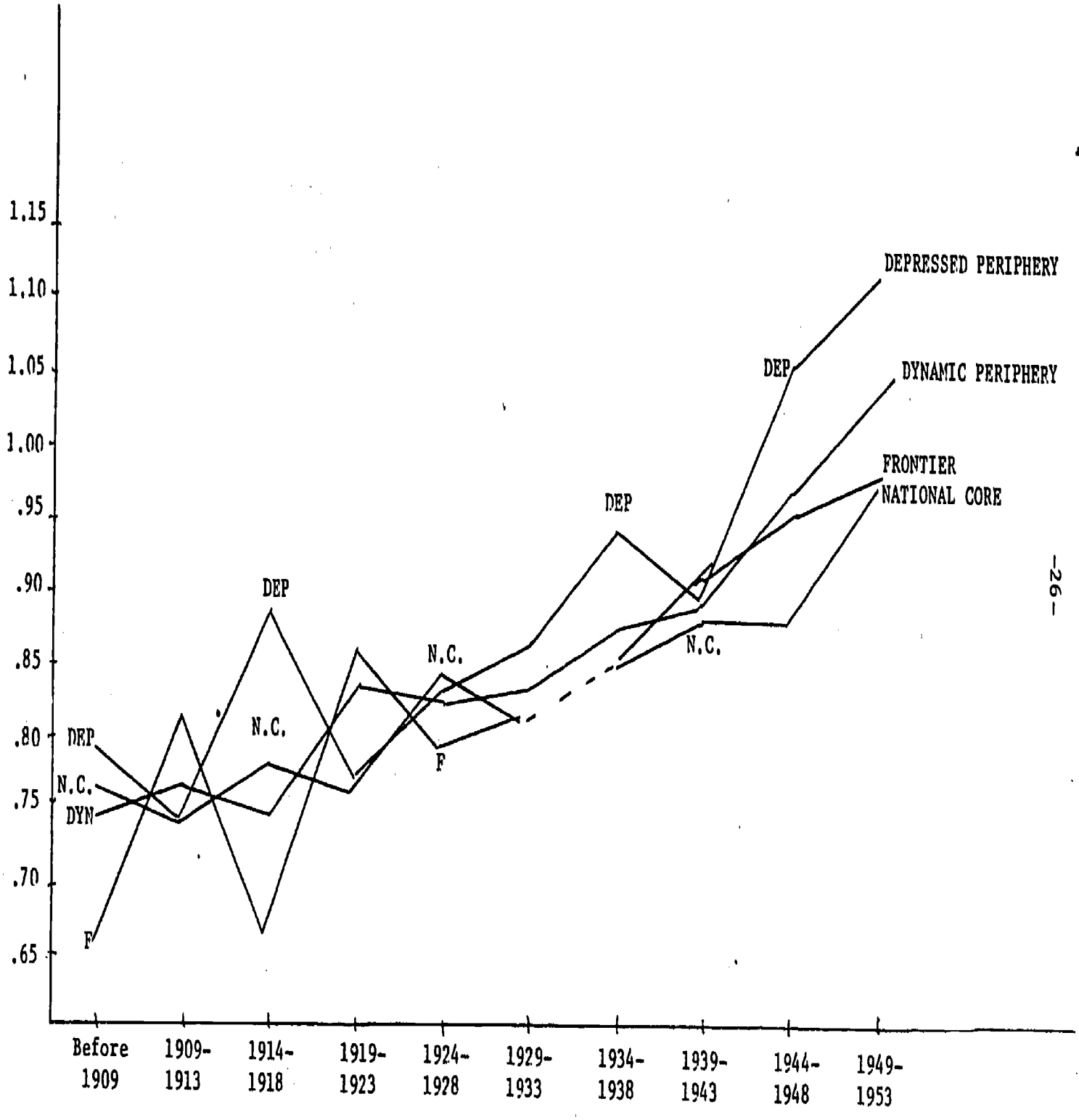

FIGURE 4: Educational Attainment of Women as Proportion of Educational Attainment of Men

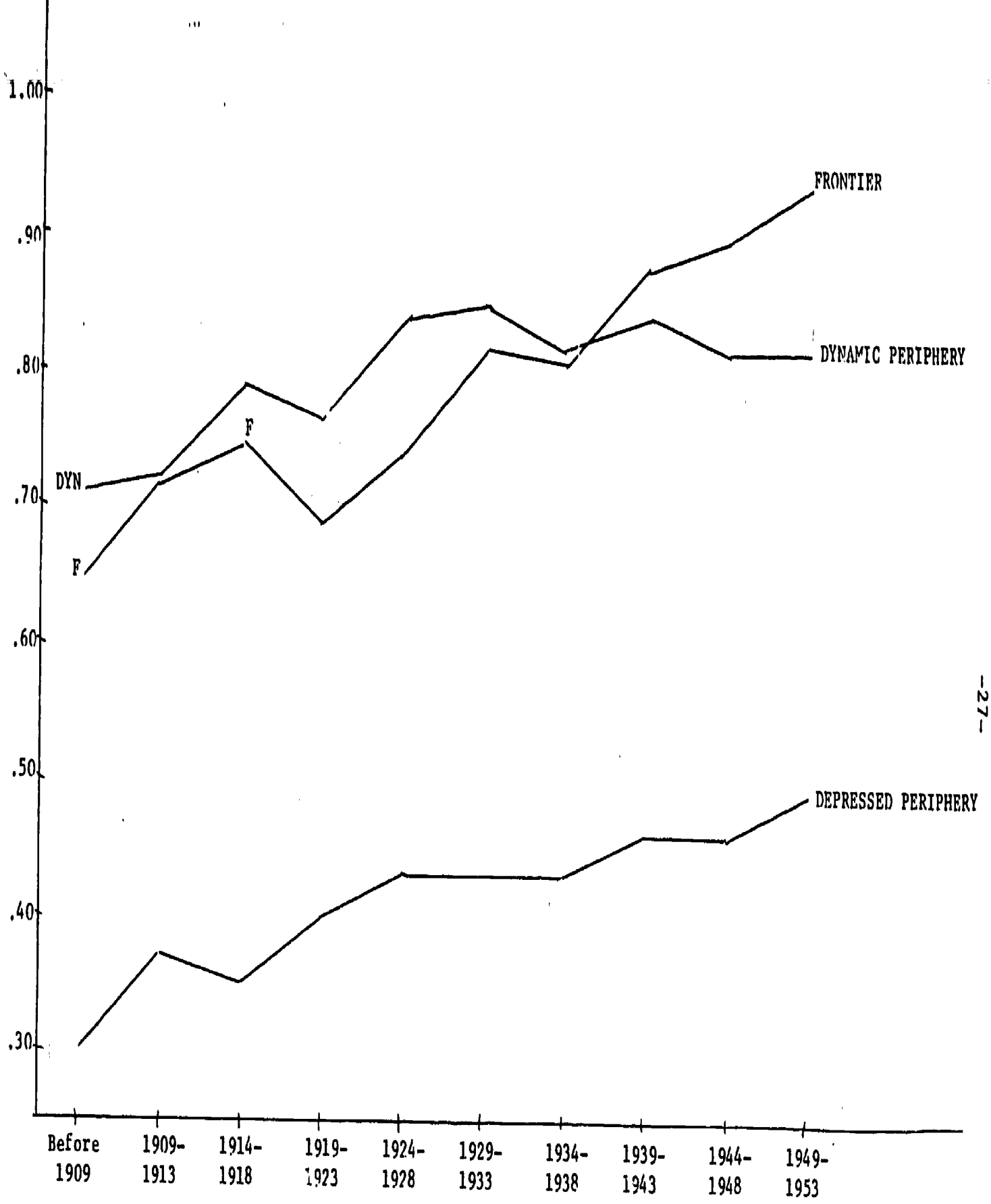

FIGURE 5: Educational Attainment in Dynamic Periphery, Frontier, and Depressed Periphery as Proportion of Educational Attainment in National Core (men only)

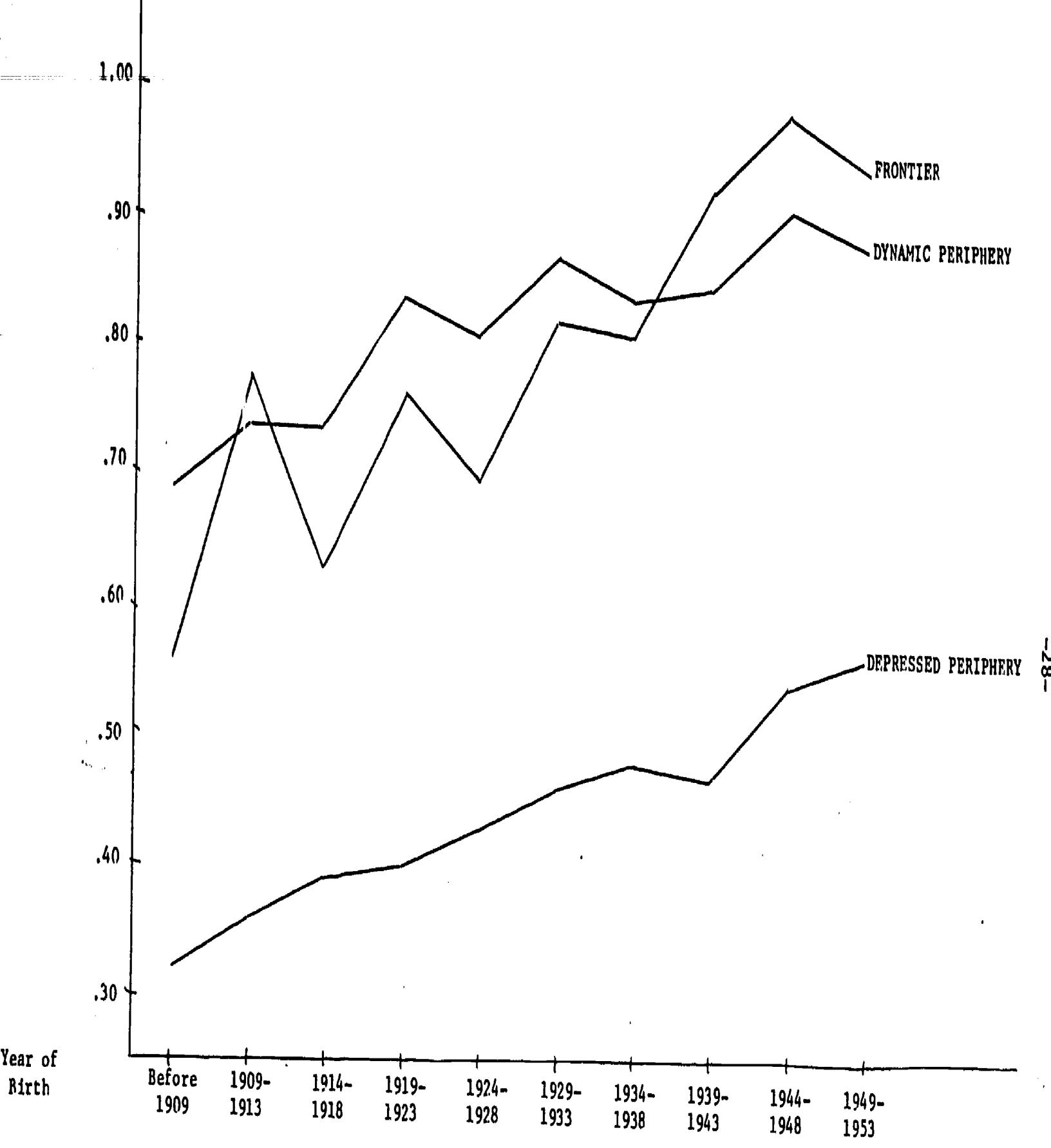

FIGURE 6: Educational Attainment in Dynamic Periphery, Frontier, and Depressed Periphery as Proportion of Educational Attainment in the National Core (women only)

TABLE 1

Trends in the Effects of Family Background

Year of Birth	MALE		FEMALE	
	Father's Occupation[a]	Farm Background	Father's Occupation[a]	Farm Background
Before 1909	1.10	-1.06	1.15	-0.58
1909-1913	1.32	-0.77	1.09	-1.18
1914-1918	1.23	-0.96	1.13	-1.12
1919-1923	1.23	-1.20	1.02	-1.72
1924-1928	1.29	-1.25	1.18	-1.38
1929-1933	1.28	-1.18	1.26	-0.88
1934-1938	1.27	-1.37	1.32	-1.17
1939-1943	1.25	-1.30	1.30	-1.44
1944-1948	1.29	-1.42	1.26	-1.64
1949-1953	1.06	-1.48	1.16	-1.68

[a] The effects of father's occupational status are multiplied by a factor of 10.

TABLE A1

Principal Activities of Respondents Aged 10-14 and 15-19 in 1973, by Region and Sex

		MALE					FEMALE				
	AGE	WORKING[a]	HOUSEHOLD	SCHOOL	OTHER[b]	N	WORKING[a]	HOUSEHOLD	SCHOOL	OTHER[b]	N
National	10-14	13.4	1.9	70.0	14.7	6196	8.4	13.2	65.1	13.3	6135
Core	15-19	61.9	0.9	23.7	13.5	5649	40.0	26.4	27.0	6.6	5967
Dynamic	10-14	25.5	2.9	59.7	11.9	10208	11.9	20.0	58.9	9.2	10095
Periphery	15-19	70.1	1.5	19.8	8.6	8450	37.0	34.3	23.3	5.3	8812
Depressed	10-14	40.9	7.6	35.9	15.6	6073	18.9	32.1	39.9	9.1	5976
Peri	15-19	72.8	1.6	15.5	10.1	4643	37.6	34.9	21.1	6.4	5032
Frontier	10-14	16.2	4.6	66.7	12.4	2669	7.7	19.0	64.6	8.7	2831
	15-19	59.9	1.9	29.5	8.6	2158	29.8	32.9	32.0	5.3	2495

[a] Includes those employed but not working and those looking for work.

[b] Includes those unable to work.

TABLE A2

Mean Levels of Educational Attainment, with Standard Deviations and Coefficients of Variation in the National Core

Cohort Born		N	Mean	Standard Deviation	Coefficient of Variation
Before 1909	Male	1921	3.73	4.04	1.08
	Female	2356	2.82	3.42	1.21
1909-1913	Male	1240	4.04	3.98	.99
	Female	1348	3.00	3.32	1.11
1914-1918	Male	1589	4.15	4.02	.97
	Female	1670	3.25	3.48	1.07
1919-1923	Male	2089	4.56	4.18	.92
	Female	1987	3.46	3.54	1.02
1924-1928	Male	2516	4.74	4.10	.86
	Female	2717	4.00	3.69	.92
1929-1933	Male	2911	4.94	4.04	.82
	Female	3040	4.01	3.57	.89
1934-1938	Male	3149	5.33	4.08	.77
	Female	3352	4.51	3.76	.83
1939-1943	Male	3503	5.67	4.15	.73
	Female	3548	4.99	3.94	.79
1944-1948	Male	3971	6.26	4.25	.68
	Female	4233	5.50	4.06	.74
1949-1953	Male	4928	6.49	3.90	.60
	Female	5188	6.32	4.01	.63

TABLE A3

Mean Levels of Educational Attainment, with Standard Deviations and Coefficients of Variation in the Dynamic Periphery

Cohort Born		N	Mean	Standard Deviation	Coefficient of Variation
Before 1909	Male	1991	2.63	3.23	1.23
	Female	2183	1.94	2.78	1.43
1909-1913	Male	1375	2.91	3.19	1.10
	Female	1392	2.22	2.84	1.28
1914-1918	Male	1803	3.29	3.68	1.12
	Female	1712	2.42	2.95	1.22
1919-1923	Male	2234	3.52	3.73	1.06
	Female	2210	2.92	3.30	1.13
1924-1928	Male	2972	3.96	4.08	1.03
	Female	2880	3.24	3.47	1.07
1929-1933	Male	3730	4.18	4.06	.97
	Female	3618	3.49	3.60	1.03
1934-1938	Male	4287	4.37	4.01	.92
	Female	4286	3.79	3.73	.98
1939-1943	Male	4841	4.79	4.18	.87
	Female	4890	4.26	3.91	.92
1944-1948	Male	5276	5.16	4.16	.81
	Female	5784	5.00	4.21	.84
1949-1953	Male	6721	5.33	3.82	.72
	Female	7027	5.53	4.06	.73

TABLE A4

Mean Levels of Educational Attainment, with Standard Deviations and Coefficients of Variation in Frontier

Cohort Born		N	Mean	Standard Deviation	Coefficient of Variation
Before 1909	Male	474	2.43	2.85	1.17
	Female	516	1.58	2.36	1.49
1909-1913	Male	281	2.89	3.35	1.16
	Female	331	2.33	2.87	1.23
1914-1918	Male	396	3.11	3.19	1.03
	Female	431	2.06	2.56	1.24
1919-1923	Male	536	3.14	3.12	.99
	Female	535	2.66	2.89	1.09
1924-1928	Male	706	3.51	3.25	.93
	Female	715	2.79	2.84	1.02
1929-1933	Male	837	4.07	3.72	.91
	Female	897	3.30	3.11	.94
1934-1938	Male	909	4.32	3.77	.87
	Female	1025	3.67	3.22	.88
1939-1943	Male	1077	5.01	4.12	.82
	Female	1094	4.57	3.90	.85
1944-1948	Male	1202	5.66	4.31	.76
	Female	1493	5.39	4.13	.77
1949-1953	Male	1594	6.07	3.62	.60
	Female	1846	5.92	3.81	.64

TABLE A5

Mean Levels of Educational Attainment, with Standard Deviations and Coefficients of Variation in the Depressed Periphery

Cohort Born		N	Mean	Standard Deviation	Coefficient of Variation
Before 1909	Male	1751	1.12	2.24	2.00
	Female	1882	0.89	1.87	2.10
1909-1913	Male	955	1.48	2.49	1.68
	Female	984	1.09	2.01	1.84
1914-1918	Male	1106	1.44	2.33	1.62
	Female	1171	1.27	2.36	1.86
1919-1923	Male	1342	1.83	2.92	1.60
	Female	1416	1.40	2.42	1.73
1924-1928	Male	1696	2.05	3.10	1.51
	Female	1783	1.71	2.65	1.55
1929-1933	Male	1922	2.14	3.05	1.43
	Female	2059	1.83	2.72	1.49
1934-1938	Male	2016	2.29	3.10	1.35
	Female	2457	2.15	3.04	1.41
1939-1943	Male	2308	2.61	3.49	1.34
	Female	2636	2.33	3.20	1.37
1944-1948	Male	2645	2.86	3.71	1.30
	Female	3145	2.99	3.70	1.24
1949-1953	Male	3165	3.16	3.53	1.12
	Female	3907	3.52	3.77	1.07

TABLE A6

Educational Attainment of Women as a Proportion of Educational Attainment of Men

Year of Birth	National Core	Dynamic Periphery	Frontier	Depressed Periphery
Before 1909	.76	.74	.65	.79
1909-1913	.74	.76	.81	.74
1914-1918	.78	.74	.66	.88
1919-1923	.76	.83	.85	.77
1924-1928	.84	.82	.79	.83
1929-1933	.81	.83	.81	.86
1934-1938	.85	.87	.85	.94
1939-1943	.88	.89	.91	.89
1944-1948	.88	.97	.95	1.05
1949-1953	.97	1.04	.98	1.11

TABLE A7

Educational Attainment in Each Region as a Proportion of Educational Attainment in National Core

Year of Birth	MALE			FEMALE		
	Dynamic Periphery	Frontier	Depressed Periphery	Dynamic Periphery	Frontier	Depresse Peripher
Before 1909	.71	.65	.30	.69	.56	.32
1909-1913	.72	.72	.37	.74	.78	.36
1914-1918	.79	.75	.35	.74	.63	.39
1919-1923	.77	.69	.40	.84	.77	.40
1924-1928	.84	.74	.43	.81	.70	.43
1929-1933	.85	.82	.43	.87	.82	.46
1934-1938	.82	.81	.43	.84	.81	.48
1939-1943	.84	.88	.46	.85	.92	.47
1944-1948	.82	.90	.46	.91	.98	.54
1949-1953	.82	.94	.49	.88	.94	.56

TABLE A8

Trends in the Effects of Family Background, National Core

Year of Birth	MALE		FEMALE	
	Father's Occupation[a]	Farm Background	Father's Occupation[a]	Farm Background
Before 1909	1.07	-1.16	1.35	-0.52
1909-1913	1.30	-0.58	1.36	-0.56
1914-1918	1.24	-1.05	1.16	-1.12
1919-1923	1.19	-1.15	1.11	-1.39
1924-1928	1.23	-1.00	1.18	-1.21
1929-1933	1.22	-1.15	1.17	-0.55
1934-1938	1.18	-1.25	1.23	-1.01
1939-1943	1.20	-0.98	1.30	-0.90
1944-1948	1.17	-1.14	1.26	-1.18
1949-1953	1.01	-1.08	1.11	-1.15

[a] The effects of father's occupational status are multiplied by a factor of 10.

Trends in the Effects of Family Background, Dynamic Periphery

Year of Birth	MALE		FEMALE	
	Father's Occupation[a]	Farm Background	Father's Occupation[a]	Farm Background
Before 1909	1.16	-0.41	0.88	-0.74
1909-1913	1.20	-1.04	0.94	-1.31
1914-1918	1.15	-0.85	1.16	-1.00
1919-1923	1.36	-1.14	0.91	-1.91
1924-1928	1.47	-0.89	1.07	-2.09
1929-1933	1.34	-1.22	1.34	-0.87
1934-1938	1.27	-1.50	1.37	-1.11
1939-1943	1.22	-1.41	1.21	-1.65
1944-1948	1.29	-1.43	1.28	-1.34
1949-1953	1.02	-1.54	1.21	-1.53

[a] The effects of father's occupational status are multiplied by a factor of 10.

Trends in the Effects of Family Background, Frontier

Year of Birth	MALE		FEMALE	
	Father's Occupation[a]	Farm Background	Father's Occupation[a]	Farm Background
Before 1909	1.17	-0.32	1.16	1.03
1909-1913	1.25	0.06	0.50	-2.60
1914-1918	0.42	-1.84	1.18	-0.52
1919-1923	0.83	-0.16	1.08	-0.07
1924-1928	0.44	-2.07	1.42	-0.38
1929-1933	1.10	-0.68	1.19	-1.12
1934-1938	1.36	-0.12	1.01	-1.17
1939-1943	1.28	-0.69	1.09	-1.15
1944-1948	1.20	-0.23	0.99	-1.97
1949-1953	0.91	-0.40	0.87	-1.10

[a] The effects of father's occupational status are multiplied by a factor of 10.

Trends in the Effects of Family Background, Depressed Periphery

Year of Birth	MALE		FEMALE	
	Father's Occupation[a]	Farm Background	Father's Occupation[a]	Farm Background
Before 1909	0.98	-0.55	0.91	-0.30
1909-1913	1.61	0.14	1.03	-0.29
1914-1918	1.54	0.66	0.89	-0.94
1919-1923	1.36	-0.22	0.90	-1.32
1924-1928	1.48	-0.93	1.19	-0.56
1929-1933	1.22	-0.23	1.17	-0.53
1934-1938	1.37	-0.56	1.47	-0.69
1934-1943	1.30	-0.79	1.57	-0.69
1944-1948	1.72	-0.72	1.27	-2.04
1949-1953	1.41	-0.89	1.37	-1.46

[a] The effects of father's occupational status are multiplied by a factor of 10.

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